

REMARKS

Claims 1-23 are currently pending in this application. Claims 1, 7, 15, and 23 have been amended to further clarify certain features of these claims to expedite prosecution of this application. The foregoing amendments are made without prejudice to pursuing these claims in unamended or other forms in a continuation or other application.

In the August 22, 2008 Office Action, claims 1-23 were rejected. More specifically, the status of the application in light of this Office Action is as follows:

- (A) Claims 1-5, and 8 were rejected under 35 U.S.C. § 103(a) over the combination of U.S. Published Patent Application No. US 2003/0021312 to Gruzdev et al ("Gruzdev") and U.S. Patent No. 4,953,176 to Ekstrand ("Ekstrand");
- (B) Claims 6, 14, and 22 were rejected under 35 U.S.C. § 103(a) over the combination of Gruzdev, Ekstrand, and U.S. Patent No. 5,550,853 to Ostler ("Ostler");
- (C) Claims 7-13 were rejected under 35 U.S.C. § 103(a) over the combination of Gruzdev, Ekstrand, and Ostler; and
- (D) Claims 15 and 17-21 were rejected under 35 U.S.C. § 102(b) over Gruzdev.

A. Response to the Section 103(a) Rejection of Claims 1-5 and 8 (Gruzdev and Ekstrand)

Claims 1-5 and 8 were rejected under 35 U.S.C. § 103(a) over the combination of Gruzdev and Ekstrand. As set forth in detail below, the applied references Gruzdev and Ekstrand cannot support a Section 103 rejection of claims 1-5 and 8 for at least the reason that these references, either individually or in combination, fail to disclose or suggest all the claimed features.

1. Independent Claim 1 is Directed to a Laser Including, Inter Alia, a Power Source Wherein the Power Source Is Configured to Provide Excitation Energy for a Lasing Medium

Independent claim 1, as amended, is directed to a laser comprising a laser source, a power source, and a fan for generating an air flow. The power source causes the laser source to generate a laser beam and is configured to provide excitation energy for a lasing medium. The laser source and the power source each have an exterior surface. The laser source and the power source are arranged in an end-to-end series relation along a longitudinal axis such that the fan directs the airflow generally parallel with the longitudinal axis to pass first adjacent to the exterior surface of the laser source for cooling the laser source, and then to pass adjacent to the exterior surface of the power source for cooling the power source. Several embodiments of lasers in accordance with claim 1 accordingly have a power source at one end of the laser source such that the power source and laser source are inline with each other along the longitudinal axis.

2. Gruzdev Discloses a Portable Laser Device Based on a Solid-State Laser Technology

Gruzdev discloses a portable, hand-held laser device with an internal spiral groove 517. To increase the volume of available liquid cooling and to further intensify the cooling process, the internal spiral groove 517 is in fluid communication with a buffer space 548 also filled with the liquid coolant. A conventional rotational arrangement, such as an electric motor 525 provided with a magnetic clutch, for example, generate[s] rotational motion of the jacket 519 including the internal spiral groove 517 relative to the laser rod 518. (Gruzdev, paragraph [0040].)

3. Ekstrand Discloses an Air-Cooled Ion Laser

Ekstrand discloses an air-cooled ion laser with a fan 21. The fan 21 draws a cooling medium across the cooling fins to remove heat from the ceramic tube. (Ekstrand, col. 3, lines 4-6.) Ekstrand discloses that if the fan directions were reversed to blow cool air onto the cooling fins rather than to draw cool air across them, the

symmetry of the cooling fins would be adjusted accordingly. (Ekstrand, col. 4, lines 11-14). Ekstrand does not disclose a power source for the fan 21.

4. Claim 1 is Patentable over Gruzdev and Ekstrand for at Least the Reason that These References Fail to Disclose or Suggest a Cooling Fan Located in a Generally Straight Line Path with the Laser Source and the Power Source Configured to Provide Excitation Energy for a Lasing Medium

Claim 1 is patentable over Gruzdev and Ekstrand because the cited references, either taken alone or in combination, do not disclose or suggest all the claimed features. Claim 1, for example, recites a laser source and a power source arranged in an end-to-end series relation along a longitudinal axis such that the fan directs the air flow generally parallel with the longitudinal axis to pass (a) first adjacent to the laser source, and then (b) to pass adjacent to the power source. The claimed power source is configured to provide excitation energy for a lasing medium.

The Office Action alleges that the electric motor 525 in Figure 5 of Gruzdev corresponds to the claimed power source. This is incorrect. Gruzdev's electric motor 525 is structurally different than the power source of claim 1 that provides excitation energy for a lasing medium. Nowhere does Gruzdev disclose or suggest that the electric motor 525 can be used to provide excitation energy for a lasing medium. Rather, as outlined above, the motor 525 is merely an electric motor having a magnetic clutch that is configured to "generate rotational motion of the jacket 519 including the internal spiral groove 517 relative to the laser rod 518." (Gruzdev, [0040].) The motor 525 is not in any way associated with causing the laser source to generate a laser beam. Indeed, the electric motor 525 is not a suitable power source for energizing the laser rod 518 of Gruzdev's device. Rather, the power source for Gruzdev's laser is the exciting lamps 520 and 521, which are situated parallel to the laser medium (i.e., the laser rod 518). The exciting lamps 520 and 521 are typically powered by a high voltage DC supply located apart from the device (and not shown or mentioned in the disclosure of Gruzdev).

Even assuming for the sake of argument that exciting lamps 520 and 521 correspond to the claimed power source (and the applicants expressly do not), the

arrangement of Gruzdev's device does not correspond to the arrangement of the laser of claim 1. For example, the fan 530 in the cooling arrangement 510 of Figure 5 of Gruzdev directs air flow first over the electric motor 525 and then through apertures 527 and 529 and out of the cooling arrangement 510. The air flow accordingly cools the exciting lamps 520 and 521 and the laser rod 518 simultaneously. In contrast, the laser of claim 1 recites a laser source and a power source arranged in an end-to-end series relation along a longitudinal axis such that the fan directs the air flow generally parallel with the longitudinal axis to pass (a) first adjacent to the laser source, and then (b) to pass adjacent to the power source.

Ekstrand fails to cure the above-noted deficiencies of Gruzdev to support a Section 103 rejection of claim 1. Rather, Ekstrand is only relied on in the Office Action for disclosing a device with a fan that allegedly directs air flow generally parallel with a longitudinal axis of the device. The applicants respectfully submit that this is not correct. Ekstrand specifically teaches one or more fans (e.g., fan 21 and fans 32 and 33 of Figure 2 of Ekstrand) configured to direct air flow perpendicular to a longitudinal axis of the laser. Nowhere does Ekstrand disclose or suggest that the fans are positioned to direct the air flow generally parallel with the longitudinal axis of the laser, as recited in claim 1. Furthermore, based on the undersigned attorney's review of Ekstrand, this reference never mentions the laser power source for the ionized gas in the plasma tube. The power source is not shown in any of the figures in Ekstrand's disclosure. Because the applied references Gruzdev and Ekstrand, either alone or in combination, fail to disclose or suggest all the claimed features, the Section 103 rejection of claim 1 should be withdrawn.

Claims 2-5 are patentable over Gruzdev and Ekstrand under Section 103 as depending from allowable base claim 1, and also because of the additional features of these dependent claims.

Claim 8 depends from base claim 7, and is allowable over the applied references Gruzdev and Ekstrand for reasons analogous to those discussed above with reference

to claims 1-5, and for the additional features of this dependent claim. Therefore, the Section 103 rejection of claim 8 should be withdrawn.

B. Response to Section 103 Rejection of Claims 6, 14, and 22 (Gruzdev, Ekstrand, and Ostler)

Claims 6, 14, and 22 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Gruzdev, Ekstrand, and Ostler. Claim 6 depends from allowable base claim 1, claim 14 depends from allowable base claim 7, and claim 22 depends from allowable base claim 15. As discussed above, Gruzdev and Ekstrand, either alone or in combination, fail to disclose or suggest all the features of claim 1. Ostler is relied on in the Office Action for disclosing a device with a shroud covering. (Office Action, p. 6.) Even assuming for the sake of argument that this is correct (and the applicants expressly do not), Ostler fails to cure the above-noted deficiencies of Gruzdev and Ekstrand, and therefore fails to support a Section 103 rejection of claim 1. As discussed below, the combination of Gruzdev, Ekstrand, and Ostler further fails to support a Section 103 rejection of base claims 7 and 15. Accordingly, dependent claims 6, 14, and 22 are allowable over the combination of Gruzdev, Ekstrand, and Ostler for at least the reason that these references, either alone or in combination, fail to disclose or suggest all the features of base claims 1, 7, and 15, and the additional features of dependent claim 6, 14, and 22. Therefore, the Section 103 rejection of claims 6, 14, and 22 should be withdrawn.

C. Response to Section 103 Rejection of Claims 7-13 (Gruzdev, Ekstrand, and Ostler)

Claims 7-13 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the combination of Gruzdev, Ekstrand, and Ostler. For at least the reasons explained below, however, the applied references cannot support a Section 103 rejection of claims 7-13.

Independent claim 7, as amended, is directed to a laser having a laser source with a first end, a second end spaced apart from the first end along a longitudinal axis, a laser resonator, a laser media, and electrodes for exciting the laser media. The laser further includes a power source at least proximate to one of the first or second ends of

the laser source such that the power source and the laser source are aligned along the longitudinal axis. The power source is configured to provide excitation energy to the electrodes and cause the laser source to generate a laser beam from the other one of the first or second ends. The laser of claim 7 further includes a cooling fan positioned adjacent to the power source and located in a generally straight line path with the laser source and the power source along the longitudinal axis.

Claim 7 is patentable over Gruzdev, Ekstrand, and Ostler under Section 103 because these references, either alone or in combination, fail to disclose or suggest a cooling fan positioned adjacent to the power source and located in a generally straight line path with the laser source and the power source along the longitudinal axis. In contrast to the claimed arrangement, Gruzdev's fan 530 is spaced apart from the outer casing 512 of Gruzdev's device and is positioned outboard of the electric motor 525. As discussed above, the electric motor 525 is not a "a power source at least proximate to one of the first or second ends of said laser source and . . . configured to provide excitation energy," as recited in claim 7. Rather, as mentioned previously, the motor 525 is merely an electric motor configured to rotate the jacket 519 and internal spiral groove 517 around the laser rod 518 of Gruzdev's device.

Ekstrand and Ostler fail to cure the above-noted deficiencies to Gruzdev. For example, as discussed previously, Ekstrand specifically discloses one or more fans configured to direct air flow perpendicular to a longitudinal axis of the laser. Ostler is relied on in the Office Action for disclosing an electrode. (Office Action, p. 8.) The Office Action further asserts that it would have been obvious to "apply the well known electrode as suggested by Ostler to the laser of Gruzdev, because [it] could be used to simulate[] the laser." (Office Action, p. 8.) The applicants respectfully submit that such a modification of Gruzdev's device is impracticable. For example, Gruzdev is directed to a hand-held laser device. In contrast, the electrodes of Ostler's stationary laser device are large, relatively heavy structures. A person skilled in the art would not be motivated to modify Gruzdev's compact, hand-held laser device with the large electrodes of Ostler. Because the applied references Gruzdev, Ekstrand, and Ostler,

either alone or in combination, fail to disclose or suggest all the claimed features, the Section 103 rejection of claim 7 should be withdrawn.

Claims 8-13 are patentable over Gruzdev, Ekstrand, and Ostler under Section 103 as depending from allowable base claim 7, and also because of the additional features of these dependent claims.

D. Response to the Section 102 Rejection of Claims 15 and 17-21 over Gruzdev

Claims 15, and 17-21 were rejected under 35 U.S.C. § 102(b) over Gruzdev. Gruzdev, however, cannot support a Section 102 rejection of claims 15 and 17-21 for at least the reason that this reference fails to disclose or suggest all the claimed features.

Independent claim 15, as amended, is directed to a laser comprising a laser source and a power source at least proximate to the laser source. The power source is configured to provide excitation energy for a lasing medium of the laser source to generate a laser beam. The laser also includes a cooling fan at one end of the power source. The cooling fan is adapted for generating an air flow directed in a generally straight line path with the laser source and the power source for cooling the laser and power sources.

Claim 15 is patentable over Gruzdev under Section 102 because this reference fails to disclose or suggest a cooling fan at one end of the power source that generates an air flow directed in a generally straight line path with the laser source and the power source. In contrast with the laser of claim 15, Gruzdev's fan 530 is spaced apart from the outer casing 512 of Gruzdev's device and is positioned outboard of the electric motor 525. As discussed above, the electric motor 525 is not a power source "at least proximate to said laser source and configured to provide excitation energy for a lasing medium of the laser source to generate a laser beam," as recited in claim 15. Rather, as mentioned above, the motor 525 is merely an electric motor configured to rotate the jacket 519 and internal spiral groove 517 around the laser rod 518 of Gruzdev's device. Gruzdev accordingly fails to disclose or suggest the claimed cooling fan at one end of the power source that generates an airflow directed in a generally straight line path with

the laser source and the power source. Because Gruzdev fails to disclose or suggest all the claimed features, the Section 102 rejection of claim 15 should be withdrawn.

Claim 15 is further patentable over Gruzdev under Section 103 because there is no suggestion or motivation to modify Gruzdev come up with the claimed combination of features. For example, the elaborate cooling arrangement 510 of Gruzdev includes rotatably moving a jacket 519 and spiral groove 517 within the jacket 519 relative to the laser rod 518. A liquid cooling medium is moved through the groove 517 and in the buffer space 548 of the assembly. The electric motor 525 is operably coupled to the jacket 519 to facilitate the rotational movement of the jacket 519 relative to the laser rod 518. (Gruzdev, [0040]–[0042].) The applicants respectfully submit that it would require a significant reconfiguration of Gruzdev's device to come up with claimed power source in "end-to-end series relation along a longitudinal axis" with the laser source and the fan. The Office Action has not provided how such a modification could be achieved, or that such a modification would provide any benefit to Gruzdev's hand-held laser device. Furthermore, such a reconfiguration is inapposite to the specific and elaborate cooling arrangements disclosed in Gruzdev.

Claims 17-21 depend from allowable base claim 15. Accordingly, the Section 102 rejection of claims 17-21 should be withdrawn for at least the foregoing reasons, and for the additional features of these dependent claims.

Conclusion

In view of the foregoing, the pending claims comply with 35 U.S.C. § 112 and are patentable over the cited art. The applicants accordingly request reconsideration of the application and a mailing of a Notice of Allowance. If the Examiner has any questions or believes a telephone conference would expedite prosecution of the application, the Examiner is encouraged to contact Aaron Poledna at (206) 359-3982.

Respectfully submitted,

By _____

Aaron J. Poledna

Registration No.: 54,675
PERKINS COIE LLP
P.O. Box 1247
Seattle, Washington 98111-1247
(206) 359-3982
(206) 359-7198 (Fax)
Attorney for Applicant

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